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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/519,425

12/21/2004

Osamu Funahashi

MATS:054

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07/26/2006

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EXAMINER

SAUNDERS JR, JOSEPH

ART UNIT

PAPER NUMBER

2194

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/519,425

Applicant(s)

FUNAHASHI ET AL.

Examiner

Joseph Saunders

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12-21-04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The following changes to the drawings mentioned in the preliminary amendment have been approved: Figure 15 reference numeral 181 amended to 185, Figures 24-27 amended to include Prior Art designation, and delete page 16/16 labeled "Reference number in the drawings". In order to avoid abandonment of the application, applicant must make these above agreed upon drawing changes.

INFORMATION ON HOW TO EFFECT DRAWING CHANGES

Replacement Drawing Sheets

Drawing changes must be made by presenting replacement sheets which incorporate the desired changes and which comply with 37 CFR 1.84. An explanation of the changes made must be presented either in the drawing amendments section, or remarks, section of the amendment paper. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). A replacement sheet must include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of the amended drawing(s) must not be labeled as "amended." If the changes to the drawing figure(s) are not accepted by the examiner, applicant will be notified of any required corrective action in the next Office action. No further drawing submission will be required, unless applicant is notified.

Identifying indicia, if provided, should include the title of the invention, inventor's name, and application number, or docket number (if any) if an application number has not been assigned to the application. If this information is provided, it must be placed on the front of each sheet and within the top margin.

Annotated Drawing Sheets

A marked-up copy of any amended drawing figure, including annotations indicating the changes made, may be submitted or required by the examiner. The annotated drawing

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sheet(s) must be clearly labeled as "Annotated Sheet" and must be presented in the amendment or remarks section that explains the change(s) to the drawings.

Timing of Corrections

Applicant is required to submit acceptable corrected drawings within the time period set in the Office action. See 37 CFR 1.85(a). Failure to take corrective action within the set period will result in ABANDONMENT of the application.

If corrected drawings are required in a Notice of Allowability (PTOL-37), the new drawings MUST be filed within the THREE MONTH shortened statutory period set for reply in the "Notice of Allowability." Extensions of time may NOT be obtained under the provisions of 37 CFR 1.136 for filing the corrected drawings after the mailing of a Notice of Allowability.

Specification

2. A substitute specification including the claims is required pursuant to 37 CFR 1.125(a) because the applicant has requested changes to be made to the specification in a preliminary amendment however has not complied properly with office policy for those changes to take effect.

A substitute specification must not contain new matter. The substitute specification must be submitted with markings showing all the changes relative to the immediate prior version of the specification of record. The text of any added subject matter must be shown by underlining the added text. The text of any deleted matter must be shown by strike-through except that double brackets placed before and after the deleted characters may be used to show deletion of five or fewer consecutive characters. The text of any deleted subject matter must be shown by being placed within double brackets if strike-through cannot be easily perceived. An accompanying

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clean version (without markings) and a statement that the substitute specification contains no new matter must also be supplied. Numbering the paragraphs of the specification of record is not considered a change that must be shown.

3. The abstract of the disclosure is objected to because the second sentence and the last sentence are worded in a confusing manner. The second sentence would be clearer if it was rewritten as in the specification first paragraph under Detailed Description of Preferred Embodiments as "In the diaphragm, a bent section is disposed between its inner periphery and outer periphery, the part from the bent section to the outer periphery is conical." The last sentence would be clearer if reworded, for example, as "Support due to the suspension holder allows even a diaphragm of plane shape to secure sufficient rigidity, so that securing the rigidity of the diaphragm does not require large thickness of the diaphragm and downsizing and low profile can be realized." Correction is required. See MPEP § 608.01(b).

4. The disclosure is objected to because of the following informalities: Reference numbers 16a, 16b, 19a, 19b, and 22 are shown in Figure 2 not Figure 1 as implied by the specification.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 11 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 11 states "wherein a coupling position between the second edge and the frame is set between a top surface position and a bottom surface position of the magnetic circuit," the term "position" although referring to location seems to be extraneous and the claim would be clearer if the term was omitted. However, the specification refers to the coupling of two different components, the suspension holder and the second edge, than what is claimed, the second edge and the frame, when stating, "the speaker of embodiment 3 differs from the speaker of embodiment 1 in that the outer periphery of suspension holder 19 is coupled through the second edge 20, on the bottom side of the magnetic circuit 9, and below top surface 90 of plate 11." When comparing Figures 1 and 9 the difference as to the relative location of the connection between either the suspension holder and the second edge or the second edge and the frame is not illustrated and the applicant's explanation cited above only adds to the ambiguity of the claim.

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1 – 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant refers to the inner periphery and the outer periphery when talking about both the diaphragm and the suspension holder, however at times it is confusing as to which part the applicant is referring to. For example, claim 1 states, “the diaphragm has a bent section between the outer periphery and the inner periphery” but would be clearer if it stated, “the diaphragm has a bent section between its outer periphery and its inner periphery.” Using the term “its” or adding the phrase “of the diaphragm” or “of the suspension holder” can avoid confusion as to which component is being referenced. A similar problem occurs in claim 2, 3, and 4.

Claim 3 also is confusing due to the use of the term “part” the claim states, “wherein the diaphragm has the bent section on the outside of a central part,” it is unclear as to what defines the “central part”.

For claims 8 and 9 there is confusion when referring to which direction the first and second edges are projecting. In claim 8, “the first edge projects toward the front surface of the diaphragm,” since the first edge is connected to the diaphragm at the level of the diaphragm the statement is clear. The applicant then goes on to state “the

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second edge projects toward the back surface of the diaphragm," this statement creates confusion since the second edge is not connected to the diaphragm and not at the same level of the diaphragm but rather located below the diaphragm, when using the word "toward" the applicant, due to the relative position of the second edge to the diaphragm, is taken to mean "in the direction of" the back surface of the diaphragm when the applicant actually means away from the back surface of the diaphragm or towards the bottom surface of the magnetic circuit. The examiner would suggest rewriting the claim in reference to on point that is not in common to either edge such as the bottom surface of the magnetic surface. Therefore the first edge would project away from the bottom surface of the magnetic circuit and the second edge would project towards the magnetic circuit. Claim 9 has a similar problem.

In claim 10 the word "substantially" should be omitted since it renders the claim indefinite.

In claims 14 and 15 it is again unclear as to what top surface is being referred to. The only top surface mentioned up until this point is that of the magnetic circuit. To claim the top surface of the suspension the applicant should rewrite the claim introducing "the top surface" as "a top surface" and as mentioned above using "its" or "of the suspension holder" to clearly distinguish what part is being referred to.

Claim 16 is again unclear as to what is meant by "coupling section" by adding "and the frame" as in "a coupling section of the first edge and the frame" the claim is clearer.

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Claim 19 references the "bent section" while referring to the section holder.

Although the coupling section is the place where the diaphragm with bent section is connected to the suspension holder. The diaphragm is the part with the bent section therefore it would remove confusion if the word "bent" was replaced with "coupling" in this instance.

Claim 21 is similar in wording to claim 22 but in claim 21 the location of the plane section is unclear. Claim 21 would be better if rewritten similar to claim 22 for example, "wherein the suspension holder has the outer periphery having L-shaped cross section, the outer periphery having a plane section and an erect section. And the second edge is coupled to the plane section."

Claims 24 and 25 refer to a "tip" meaning the end of the suspension holder and the diaphragm respectively but it is unclear as to which tip, the inner periphery or outer periphery, of the respective component is claimed.

9. Claim 13 recites the limitation "another dustproof net" in Line 1. There is insufficient antecedent basis for this limitation in the claim. Although the claim may depend on claim 12 the examiner believes that "another" should be replaced with "a" and that the claim should depend on claim 1 as supported by the specification.

Allowable Subject Matter

10. Claims 1 - 27 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 1st and 2nd paragraph, set forth in this Office action.

The prior art made of record though similar does not disclose either wherein a suspension holder of which inner periphery is coupled to the voice coil body between the back surface of the diaphragm and the top surface of the magnetic circuit, or wherein the diaphragm has a bent section between the outer periphery and the inner periphery, a part from the bent section to the outer periphery is conical, and the diaphragm is coupled to the suspension holder at the bent section. Though both features can be found, the combination of these features is not present in any one loudspeaker and it would not have been obvious to one of ordinary skill in the art at the time of the invention to combine these features. The following references illustrate what could be found and what was lacking:

a. Kato et al. (US 6,236,733 B1) discloses a speaker comprising: a magnetic circuit having a magnetic gap, a top surface, and a bottom surface; a voice coil body having a bobbin and a coil section, the coil section being movable in the magnetic gap; a diaphragm of which inner periphery is coupled to an outside of the voice coil body, the diaphragm having a front surface and a back surface; a frame for storing the diaphragm; a first edge for coupling an outer periphery of the diaphragm to the frame; and a second edge for coupling an outer periphery of a suspension holder (damper 10) to the

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frame, wherein the diaphragm has a bent section between the outer periphery and the inner periphery, a part from the bent section to the outer periphery is conical, and the diaphragm is coupled to the suspension holder (damper 10) at the bent section. Kato does not disclose where the suspension holder (damper 10) has its inner periphery coupled to the voice coil body between the back surface of the diaphragm and the top surface of the magnetic circuit. Kato shows the inner periphery of the damper connected to the plate of the magnetic circuit. It would not have been obvious to one of ordinary skill in the art at the time of the invention to attach the inner periphery of the damper to the voice coil body since Kato explicitly teaches against connecting the damper to the voice coil bobbin (Column 6 Lines 39 – 45).

b. D'Hoogh (5,847,333) discloses a speaker comprising: a magnetic circuit having a magnetic gap, a top surface, and a bottom surface; a voice coil body having a bobbin and a coil section, the coil section being movable in the magnetic gap; a diaphragm of which inner periphery is coupled to an outside of the voice coil body, the diaphragm having a front surface and a back surface; a frame for storing the diaphragm; a first edge (connecting elements 13 and 15) for coupling an outer periphery of the diaphragm to the frame; a suspension holder (centering element 17) of which inner periphery is coupled to the voice coil body between the back surface of the diaphragm and the top surface of the magnetic circuit; and a second edge (connecting element 21) for coupling an outer periphery of the suspension holder to the frame. D'Hoogh does not show wherein the diaphragm has a bent section between the outer periphery and the

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inner periphery, a part from the bent section to the outer periphery is conical, and the diaphragm is coupled to the suspension holder at the bent section. Instead D'Hoogh shows a flat conical diaphragm that does not have a bent section, and sub-chassis 3 that acts a coupling member between the centering element 17 and the connecting elements 13 and 15.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Proni (6,095,280) discloses a loudspeaker of with a concentric tube suspension system for stabilizing and centering the voice coil.
- b. Proni (US 2002/0071592 A1) discloses a loudspeaker with a two-part diaphragm structure.
- c. Schulz (5,323,469) discloses a loudspeaker having a conical stabilizing element joined between an underside of a speaker membrane and an outside surface of a speaker moving coil carrier.
- d. Sahyoun (US 2004/0076309 A1) discloses a speaker with radiator flexure minimization and voice coil anti-wobble members.
- e. Kreitmeier et al. (US 2004/0165746 A1) discloses a loudspeaker with a support structures to stiffen the diaphragm or sub regions of the diaphragm.
- f. Sawa (JP 10-042392) discloses a speaker in which the diaphragm is supported by a damper and a cylindrical cushion to prevent rolling of the diaphragm.

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g. Funahashi et al. (US 2003/0185415 A1) discloses a loudspeaker of similar configuration however the diaphragm does not have a bent section.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Saunders whose telephone number is (571) 270-1063. The examiner can normally be reached on Monday - Thursday, 9:00 a.m. - 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Myhre can be reached on (571) 270-1065. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



JS
July 20, 2006



James W. Myhre
Supervisory Patent Examiner